

1 **CLUSTER-BASED CACHE MEMORY ALLOCATION**

2 **ABSTRACT OF THE DISCLOSURE**

3 The present invention relates to a disk drive including a cache memory having a
4 plurality of sequentially-ordered memory clusters for caching disk data stored in sectors (not
5 shown) on disks of a disk assembly. The disk sectors are identified by logical block addresses
6 (LBAs). A cache control system of the disk drive comprises a cluster control block memory,
7 having a plurality of cluster control blocks (CCB), and a tag memory 22, having a plurality of tag
8 records, that are embedded within the cache control system. Each CCB includes a cluster
9 segment record with an entry for associating the CCB with a particular memory cluster and for
10 forming variable length segments of the memory clusters without regard to the sequential order
11 of the memory clusters. Each tag record assigns a segment to a continuous range of LBAs and
12 defines the CCBs forming the segment. Each segment of the memory clusters is for caching data
13 from a contiguous range of the logical block addresses. The cache control system efficiently
14 exploits available memory clusters for responding to host commands.